Fizik Bölümü / PHYSICS /

| Course Code | Course Name | Teorical | Practice | Laboratory | Credits | ECTS |
|---|---|---|---|---|---|---|
| FZK-4021 | Optoelectronic I | 2.00 | 2.00 | 0.00 | 3.00 | 7.00 |

Course Detail

| | | |
|---|---|---|
| **Course Language** | : | Turkish |
| **Qualification Degree** | : | Bachelor |
| **Course Type** | : | Optional |
| **Preconditions** | : | Not |
| **Objectives of the Course** | : | This course aims to help students learn the physics of the optoelectronic device |
| **Course Contents** | : | Light, dual nature of light, refraction, interference, polarization, Maxwell equations, superposition principle, modulation of light, non-linear optics, semiconductor materials and their applications, detectors, photodetectors, LED |
| **Recommended or Required Reading** | : | Optoelectronics: An Introduction; J. Wilson, J. Hawkes, Prentice Hall PTR., 0136384951, (ISBN-13: 978-0136384953), 1993 'Optoelektronik', J. Wilson, J.F.B. Hawkes'ten çeviren İbrahim OKUR, Değişim Yayınları, 9789758289110, 2000 'Optics and Lasers: Including Fibers and Optical Waveguides', Matt Young, Springer, 354065741X, (ISBN13: 9783540657415), 2000 |
| **Planned Learning Activities and Teaching Methods** | : | Lecture, recitation and homeworks |
| **Recommended Optional Programme Components** | : | Current research topics for students |
| **Instructors** | : | Prof. Dr. Mustafa Kurt |
| **Instructor's Assistants** | : | Assoc.Prof.Dr. Mustafa KURT |
| **Presentation Of Course** | : | Face to face |

Course Outcomes

**Upon the completion of this course a student :**

1 Apply the basic science knowledge.

2 Recognize the physical properties and applications of light

3 Define the natural phenomena.

4 Solve the problems on optical sensors

5 Relate the knowledge of different disciplines.

6 Associate the obtained information with technology and industry.

7 Communicate effectively by oral and written ways

Preconditions

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|---|---|---|---|---|---|---|

Weekly Contents

| | Teorical | Practice | Laboratory | Preparation Info | Teaching Methods |
|---|---|---|---|---|---|
| 1.Week | *Introduction to optoelectronics | | | | |
| 2.Week | *Light, nature of light | | | | |
| 3.Week | *Polarization, superposition principle | | | | |
| 4.Week | *Modulation of light | | | | |
| 5.Week | *Modulation of light | | | | |
| 6.Week | *Semiconductor materials | | | | |
| 7.Week | *Midterm exam | | | | |
| 8.Week | *Semiconductor materials | | | | |
| 9.Week | *Non-linear optics | | | | |
| 10.Week | *Optical applications of semiconductor materials | | | | |
| 11.Week | *Detectors | | | | |
| 12.Week | *Detectors | | | | |
| 13.Week | *Light emitting devices , Photodetectors | | | | |
| 14.Week | *Light emitting devices , Photodetectors | | | | |

Assesment Methods %

1 Mid Term Exam 1 : 40.000

2 Final : 60.000

ECTS Workload

| Activities | Count | Time(Hour) | Sum of Workload |
|---|---|---|---|
| Final | 1 | 3.00 | 3.00 |
| Individual study before lecture | 14 | 3.00 | 42.00 |
| Individual study after lecture | 14 | 3.00 | 42.00 |
| Preparation for midterm | 1 | 15.00 | 15.00 |
| Preparation for final | 1 | 20.00 | 20.00 |
| Mid Term Exam 1 | 1 | 3.00 | 3.00 |
| Class Hours (14 weeks) | 14 | 3.00 | 42.00 |
| Research&Project | 2 | 15.00 | 30.00 |
| | | Total : | 197.00 |
| | | Sum of Workload / 30 ( Hour ) : | 7 |
| | | ECTS : | 7.00 |

Program And OutcomeRelation

| | P.O. 1 | P.O. 2 | P.O. 3 | P.O. 4 | P.O. 5 | P.O. 6 | P.O. 7 | P.O. 8 | P.O. 9 | P.O. 10 | P.O. 11 | P.O. 12 | P.O. 13 | P.O. 14 | P.O. 15 | P.O. 16 | P.O. 17 | P.O. 18 | P.O. 19 | P.O. 20 | P.O. 21 | P.O. 22 | P.O. 23 | P.O. 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **L.O. 1** | 5 | 4 | 4 | 4 | 4 | 3 | 5 | 3 | 4 | 2 | 1 | 3 | 4 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **L.O. 2** | 5 | 5 | 4 | 5 | 5 | 3 | 4 | 3 | 4 | 3 | 2 | 3 | 3 | 4 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **L.O. 3** | 5 | 4 | 4 | 5 | 3 | 3 | 5 | 2 | 3 | 2 | 2 | 4 | 2 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **L.O. 4** | 5 | 5 | 3 | 3 | 5 | 4 | 4 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **L.O. 5** | 5 | 5 | 4 | 4 | 4 | 3 | 5 | 3 | 4 | 4 | 2 | 3 | 3 | 4 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **L.O. 6** | 5 | 4 | 3 | 5 | 5 | 4 | 5 | 3 | 3 | 3 | 3 | 3 | 5 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **L.O. 7** | 4 | 5 | 5 | 4 | 5 | 4 | 4 | 4 | 4 | 2 | 4 | 3 | 4 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Ders/Program Çıktıları İlişkisi

| P.O. 1 | P.O. 2 | P.O. 3 | P.O. 4 | P.O. 5 | P.O. 6 | P.O. 7 | P.O. 8 | P.O. 9 | P.O. 10 | P.O. 11 | P.O. 12 | P.O. 13 | P.O. 14 | P.O. 15 | P.O. 16 | P.O. 17 | P.O. 18 | P.O. 19 | P.O. 20 | P.O. 21 | P.O. 22 | P.O. 23 | P.O. 24 | P.O. 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 5 | 4 | 4 | 4 | 4 | 5 | 2 | 4 | 2 | 2 | 3 | 3 | 4 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |